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LISTING OF THE CLAIMS

CLAIMS

What is claimed is:

1. (currently amended) A method comprising:

employing at least one system for differentiating at least one service class in a kernel providing service differentiation as a kernel service based on application level information, and using service differentiation to provide different levels of quality of service for system performance to users to perform service differentiation based on content in at least one data packet for connections accepted in said at least one system, including the steps of:

capturing said at least one data packet until a complete application header is detected;

parsing said complete application header to determine at least one application tag;

matching said at least one application tag to at least one matching rule;

determining a presence of at least one application tag match with said at least one matching rule;  
and

performing service differentiation action based on said at least one matching rule in order to provide a particular level of service from said different levels of service.

2. (currently amended) A method as in claim 1, wherein said at least one application tag includes at least one tag taken from a group of tags including: URI, cookie, request method, HTTP version, a tag in an application protocol, ~~and a tag in a communication protocol.~~

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1 3. (previously presented) A method as in claim 1, wherein said at least one application tag is a  
2 URI, and wherein the URI is the second string in a HTTP header as defined in the an application  
3 protocol.

4 4. (currently amended) A method as in claim 1, further comprising employing a table having said  
5 at least one matching rule based on application layer information.

6 5. (currently amended) A method as in claim 1, wherein the step of determining includes finding  
7 a best match of content for application layer information.

8 6. (currently amended) A method as in claim 1, wherein said step of performing service  
9 differentiation action includes at least one action taken from a group of actions including:  
10 ~~dropping~~, rate controlling, scheduling connections, monitoring, request prioritization, and a  
11 policing action.

12 7. (previously presented) A method as in claim 1, wherein said step of performing service  
13 differentiation action includes an action of dropping, and wherein said action of dropping  
14 includes discarding a connection based on rules that are created to provide better performance to  
15 the connections that are accepted.

16 8. (original) A method as in claim 6, wherein said action includes at least one act taken from a  
17 group of acts including: sending a reset message, sending an application return code, determining  
18 compliance with a given rate and/or burst, prioritization, weighted round robin, round robin,  
19 ordering, recording statistics, performing a cleanup, and protocol control.

20 9. (currently amended) A method as in claim 1, further comprising installing at least one  
21 matching rule to provide a higher level of system performance for higher classed packets and  
22 connections based on application layer information.

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1 10. (currently amended) A method as in claim 1, further comprising detecting establishment of a  
2 new connection for the purpose of service differentiation based on application layer information.

3 11. (currently amended) A method as in claim 10, wherein said step of detecting includes  
4 establishing of a new TCP connection and detecting for the purpose of service differentiation  
5 based on application layer information.  
6 .

7 12. (currently amended) A method as in claim 11, wherein said step of establishing of a new TCP  
8 connection includes for application header based service differentiation: receiving SYN packet;  
9 sending SYN-ACK packet; deferring accept; receiving ACK for SYN-ACK packet; and  
10 deferring notification of data packet.  
11 using the 3-way handshake.

12 13. (original) A method as in claim 1, wherein said step of capturing includes detecting  
13 application header delimiters for said at least one data packet.

14 14. (currently amended) An apparatus comprising a service differentiation module employing at  
15 least one system for differentiating at least one service class in a kernel providing service  
16 differentiation as a kernel service based on application level information, and using service  
17 differentiation to provide different levels of quality of service for system performance to users for  
18 connections accepted in said at least one system, said module including a tangible computing  
19 medium enabling functions of:

20 a parser to parse a client Web request;

21 a classifier to classify the request based on application headers and assigning a request class  
22 within a kernel;

23 a selector to determine an action rule based on the request class; and

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1 a performer to apply the action rule based on the request class in order to provide better system  
2 performance for higher classed packets and connections.

3 15. (withdrawn) An apparatus comprising a policy agent, said policy agent including:

4 a communicator to communicate from a user space to a kernel with an application interface;  
5 an initializer to instantiate service differentiation rules for an application tag within the kernel  
6 which include classification and action rules; and

7 a manager to delete and update rules on a user request.

8 16. (withdrawn) A method comprising:

9 forming a rule, including the steps of:

10 communicating from a user space to a kernel with an application interface;

11 instantiating service differentiation rules for an application tag within the kernel which include  
12 classification and action rules; and

13 deleting and adding rules based upon a user request.

14 17. (withdrawn) A method as in claim 16, further comprising updating rules based upon a user  
15 request.

16 18. (original) An article of manufacture comprising a computer usable medium having computer  
17 readable program code means embodied therein for causing service differentiation, the computer  
18 readable program code means in said article of manufacture comprising computer readable  
19 program code means for causing a computer to effect the steps of claim 1.

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1 19. (original) A program storage device readable by machine, tangibly embodying a program of  
2 instructions executable by the machine to perform method steps for service differentiation, said  
3 method steps comprising the steps of claim 1.

4 20. (previously presented) A computer program product comprising a tangible computer usable  
5 medium having computer readable program code means embodied therein for causing service  
6 differentiation, the computer readable program code means in said computer program product  
7 comprising computer readable program code means for causing a computer to effect the  
8 functions of claim 14.

9 21. (withdrawn) A computer program product comprising a computer usable medium having  
10 computer readable program code means embodied therein for causing rule installation, the  
11 computer readable program code means in said computer program product comprising computer  
12 readable program code means for causing a computer to effect the functions of claim 15.

13 22. (currently amended) An apparatus comprising a computing medium enabling at least one  
14 function of:

15 means for employing at least one system for differentiating at least one service class in a kernel  
16 to perform service differentiation based on content in at least one data packet for connections  
17 accepted in said at least one system, comprising:

18 means for capturing said at least one data packet until a complete application header is detected;

19 means for parsing said complete application header to determine at least one application tag;

20 means for matching said at least one application tag to at least one matching rule;

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- 1 means for determining a presence of at least one application tag match with said at least one  
2 matching rule; and
- 3 means for performing quality of service differentiation action based on said at least one matching  
4 rule.
- 5 23. (previously presented) A computer program product comprising a tangible computer usable  
6 medium having computer readable program code means embodied therein for causing  
7 differentiation of at least one service class in a kernel, the computer readable program code  
8 means in said computer program product comprising computer readable program code means for  
9 causing a computer to effect the functions of claim 22.

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